
Birla Vishvakarma Mahavidyalaya
Engineering College
V.V Nagar

# Project Report

Title

## E Care System

Course

## Design Engineering [3CP08]

**Submitted By:**

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Branch: Computer
Semester: 6th
Academic year: 2023-24

## Contents

## Abstract

The eCare System is an intuitive solution designed to assist individuals in managing their digital habits and promoting healthier screen usage patterns. In today's world, where prolonged screen time has become common, the eCare System aims to guide users to make informed decisions about their digital usage and prioritize their well-being.

A key feature of the eCare System is its alerting mechanism, which notifies users when they exceed predefined time. This alert system encourages users to take breaks from prolonged screen time, promoting eye care and reducing the risk of digital fatigue and eye strain. By providing gentle reminders to rest, the eCare System supports users maintaining their overall health and comfort.

In addition to its alerting mechanism, the eCare System offers reporting functionality, allowing users to track their application usage and gain insights into their digital habits. Through easy-to-understand reports, users can make adjustments to their screen time habits as needed.

# Introduction

We have used the Custom Tkinter Library to build GUI for our application. The Custom Tkinter Library is a specialized toolkit in Python used for creating GUIs like buttons, menus, and windows. Tkinter itself is a built-in Python library for creating GUIs, but the Custom Tkinter Library expands upon its capabilities with additional features and customization options.

One of the key advantages of using the Custom Tkinter Library is its flexibility and ease of use. It provides developers with a wide range of tools and widgets that can be easily customized to suit their specific needs. This allows for the creation of unique and visually appealing user interfaces that align with the requirements of the project.

The Custom Tkinter Library simplifies the process of creating complex GUIs by offering pre-built components and templates. These components can be easily integrated into the project, saving time and effort during the development process. Additionally, the library's documentation and community support make it easy for developers to learn and troubleshoot any issues they encounter.

Another important feature of the Custom Tkinter Library is its cross-platform compatibility. Since Tkinter is a standard Python library, applications built with the Custom Tkinter Library can run on any platform that supports Python. This ensures that the user interface remains consistent across different operating systems, providing a seamless experience for users.

## Project Objectives

1. Track Application Usage:
A key goal is to establish a system capable of monitoring and recording the duration of application usage. This functionality aims to provide users with insights into their digital habits.

2. Generate Detailed Usage Reports:
The another goal is to create a mechanism for generating reports summarizing application usage durations. This reports will provide to users information about their digital habits.

3. Implement Alerting System:
Another objective is to create an alerting mechanism within the application to notify users when predefined time is exceeded. This feature aims to reduce eye strain and digital fatigue.

4. Promote Digital Wellness:
The another goal aims users to make decisions regarding their system usage and prioritize their well-being.

**Target Audiences**

1. **General Public:**
   Anyone who uses a device and wishes to gain insights into their digital habits.

2. **Parents:**
   Parents who want to monitor and manage their children's screen time and digital activities.

3. **Health Professionals:**
   Doctors and others experts who can look at the reports and give advice to users on how to feel better by using device less. They may recommend the application to patients experiencing issues related to excessive screen time, such as eye strain, sleep disturbances etc.

**Project Significance**

This application is important for raising awareness about the negative impacts of spending too much time in front of screens, a fact many people overlook. By spending too much time on screen, health issues can arise, like eye strain and sleep problems. By giving users insights and information about their digital habits, this app helps them to action to manage their screen time better.

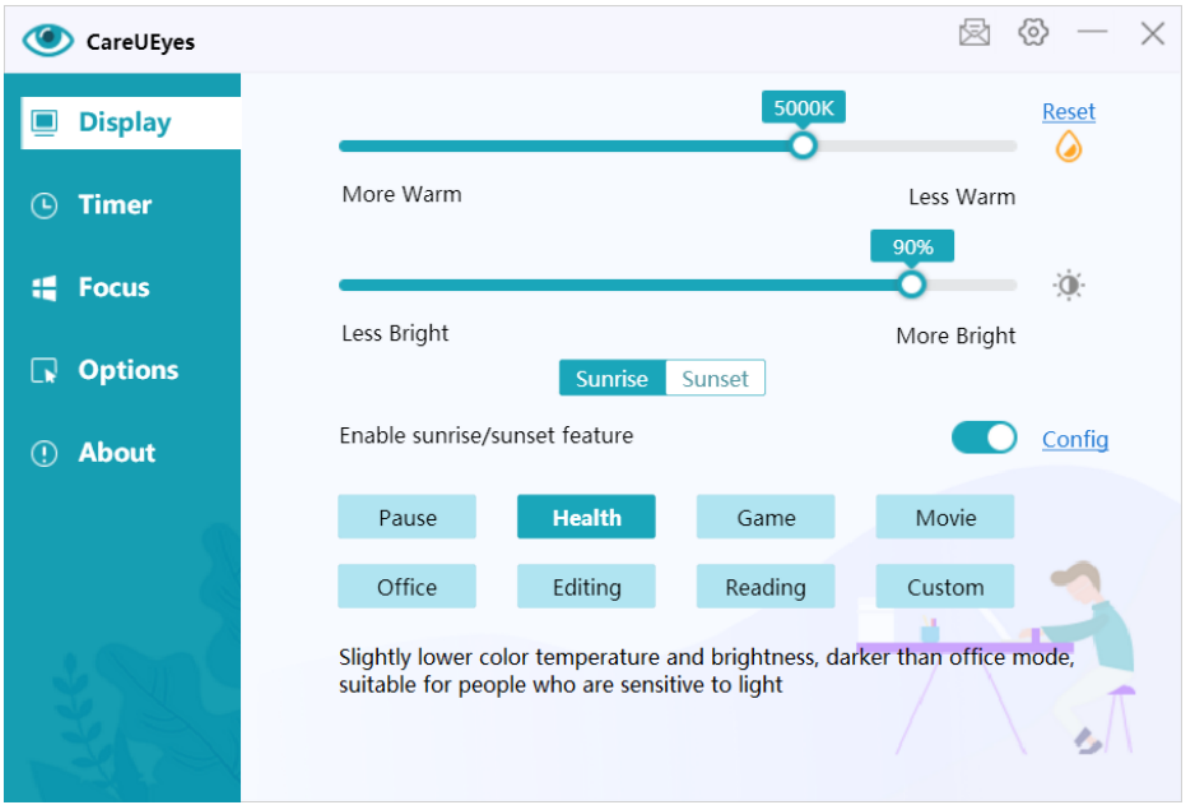
This application is beneficial for different group of users especially parents. The app offers functionality for setting healthy limits on screen time, which improves overall well-being.

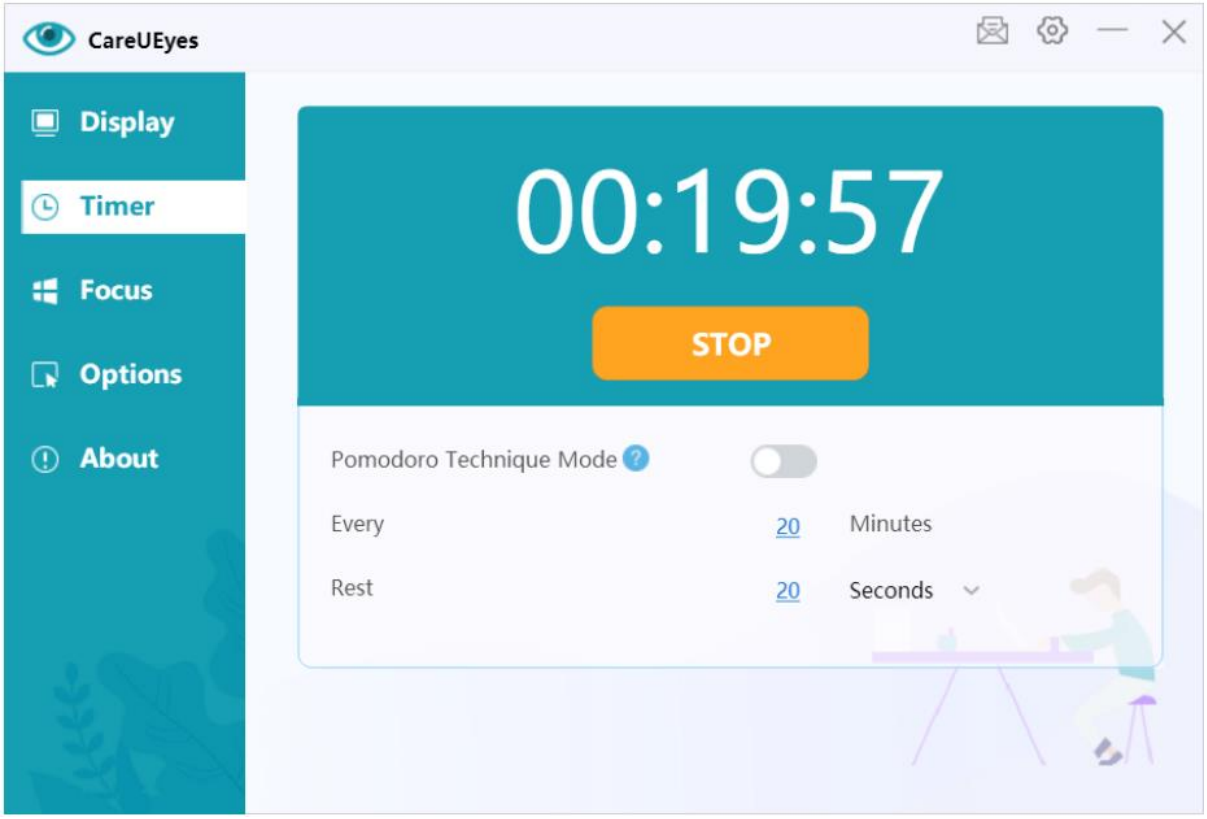
## Literature Review and Project Methodology

*Existing System*

- **CareUEyes**

CareUEyes has features such as blue light filter, brightness control and break remainder. The blue light filter of CareUEyes protects our eyes from the harmful effects of blue light. It allows us to adjust the level of blue light filtering according to our preference. The brightness control feature of CareUEyes allows us to adjust the screen brightness to roughly the same brightness as the surrounding environment. The break remainder feature encourage user to take regular breaks from device screen, reducing eye strain and other related symptoms. This application uses 20-20-20 rule which advises that for every 20 minutes spent gazing at a screen , an individual should take a 20 second break and look at something 20 feet away.






The development of application follows a structured approach that is known as Software Development Life Cycle (SDLC).

1. Planning Phase

The development of eCare system begins by collecting requirements from users. This involves communicating to them to understand their needs and preferences when it comes to managing screen time and digital wellness. This communication process helps us develop the eCare system to effectively meet the needs of its users.

2. Analysis Phase

Through requirement gathering, core features such as screen time tracking, alert notifications, and report functionalities are identified. Non-functional requirements, including performance and security considerations, are also defined to ensure the system meets user expectations. This phase involves the development of various diagrams such as the Entity-Relationship (ER) diagram, Data Flow Diagram (DFD), and Use Case diagram to visualize system requirements, interactions, and data flow.

3. Design Phase

During this phase, we create a blueprint for the software. This includes designing how the app looks, organizing the database where information is stored, and planning how everything works together.

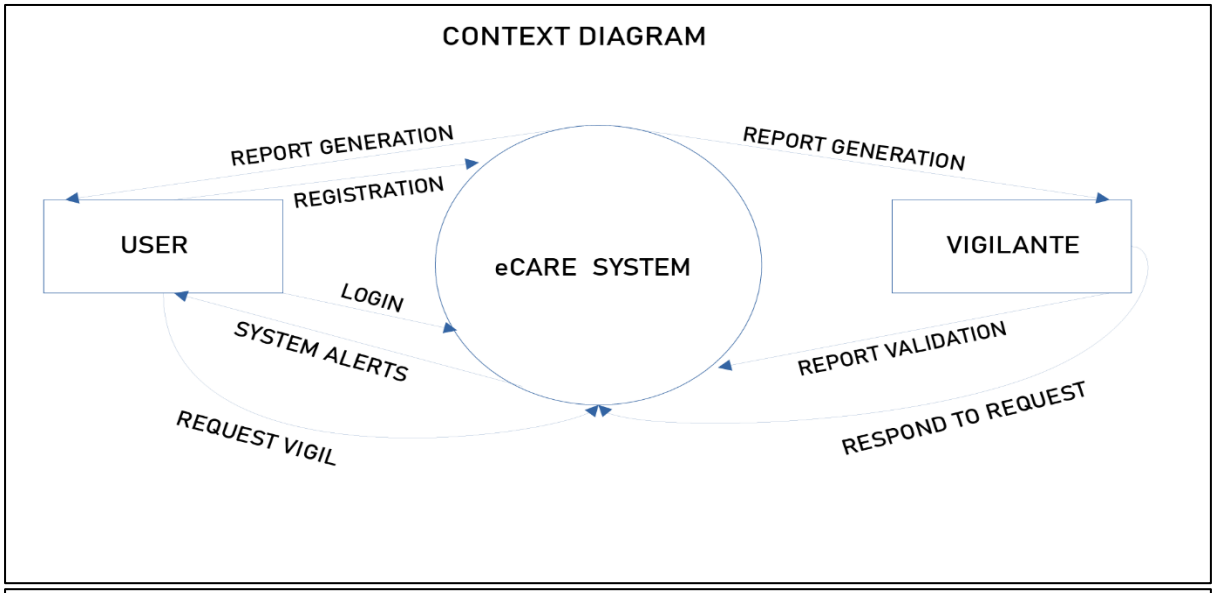
4. Implementation Phase

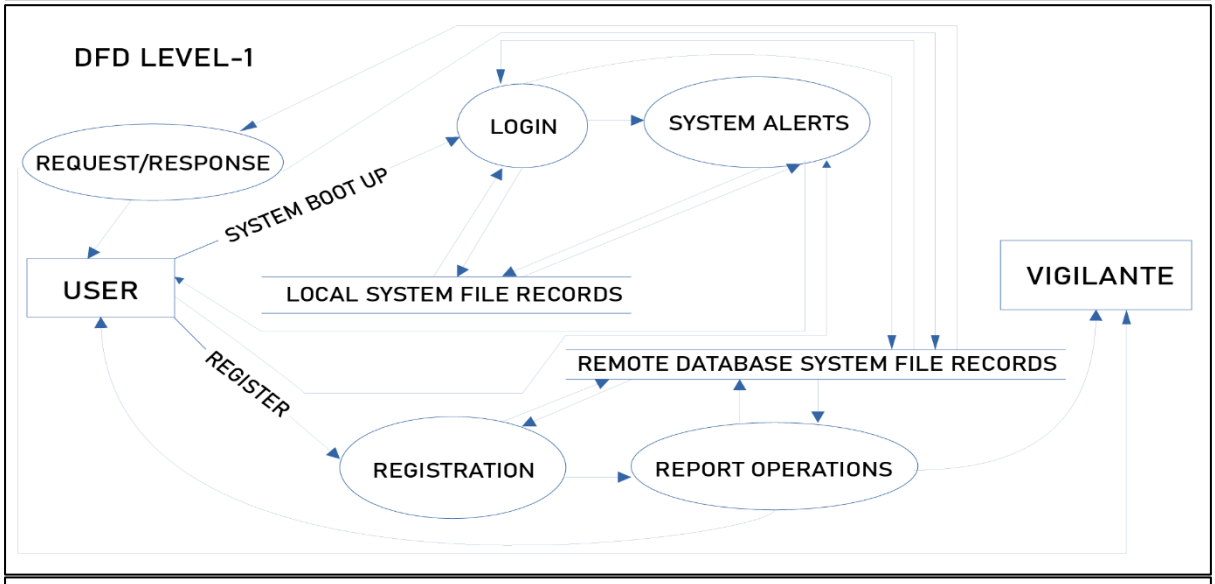
We utilize custom Tkinter widgets for the user interface design, MySQL for database management, and standard libraries for integrating alert features seamlessly. These widgets enable us to create an user friendly interface, while MySQL ensures efficient storage and retrieval of data. Additionally, standard libraries facilitate the implementation of alert functionalities, such as notifying users of exceeded screen time limits.

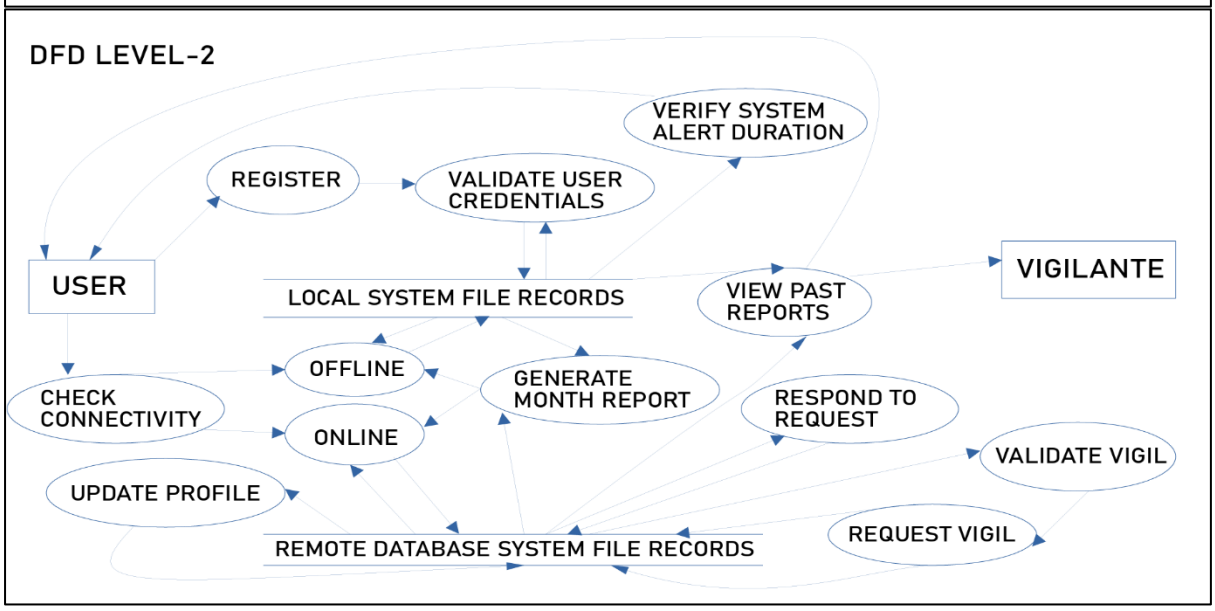
5. Testing Phase

We perform tests to verify that all functions are working correctly and efficiently. These tests help us identify and overcome any errors that arise during the development process.

# Design Considerations



DATA DICTIONARY
[ LOGIN ]

| FIELD | DATA TYPE | LENGTH | VALUES | DESCRIPTION |
|---|---|---|---|---|
| ID | INTEGER | 0-100 | AUTO GENERATED | PRIMARY KEY |
| FULL NAME | STRING | 1-30 | TEXT | NOT NULL |
| USERNAME | STRING | 1-30 | TEXT | UNIQUE, NOT NULL |
| PASSWORD | STRING | 1-50 | TEXT | NOT NULL |
| D.O.B | DATE | - | DD/MM/YYYY | NOT NULL |
| AGE | INTEGER | 1-3 | DECIMAL | DERIVED |
| LAST_REPO RT_ON | DATE | - | DD/MM/YYYY | NOT NULL |

DATA DICTIONARY
[ SYSTEM METRICS ]

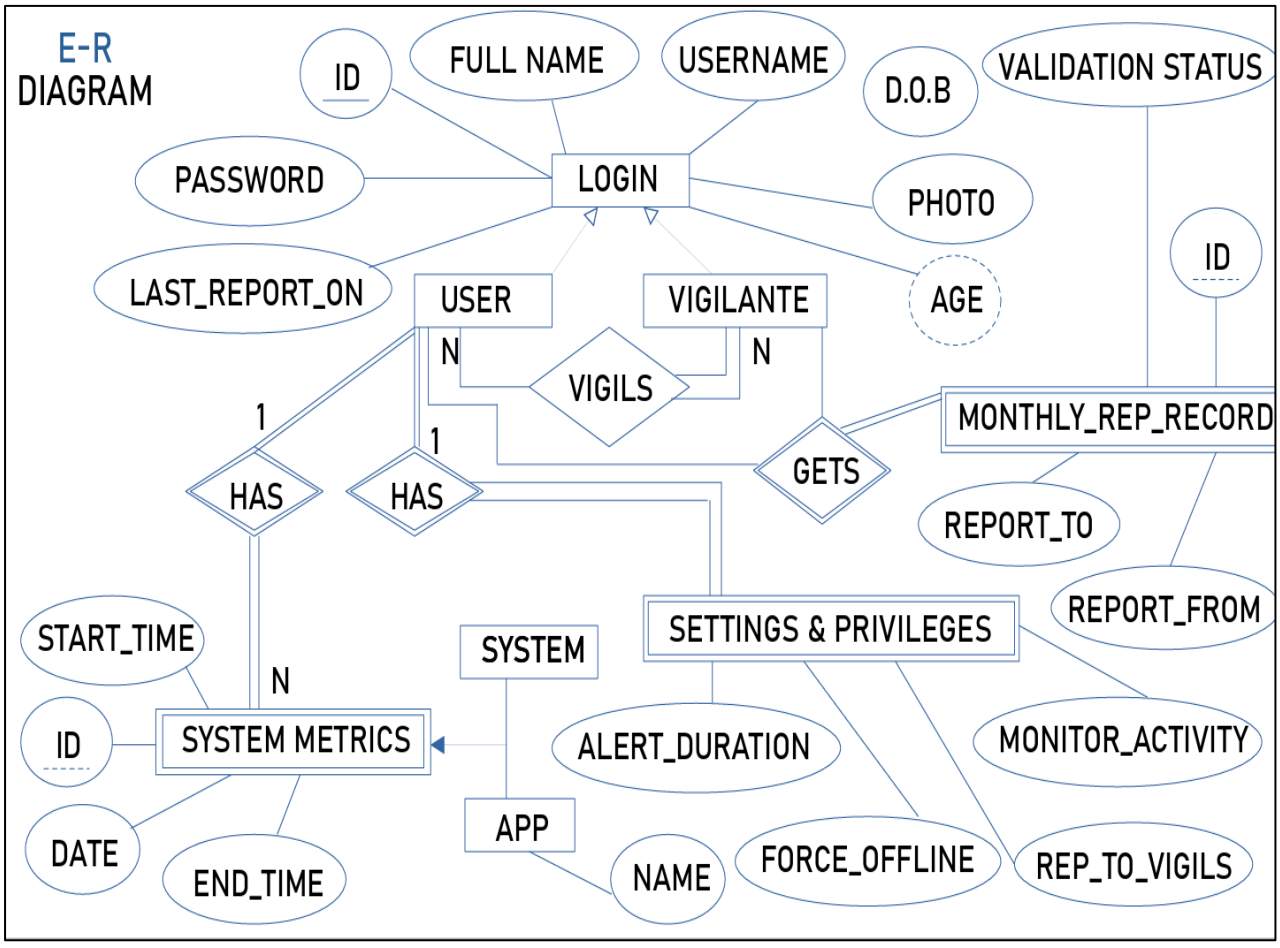
| FIELD | DATA TYPE | LENGTH | VALUES | DESCRIPTION |
|---|---|---|---|---|
| ID | INTEGER | 0-100 | AUTO GENERATED | PRIMARY KEY |
| START_TIME | TIME | - | HH:MM:SS | NOT NULL |
| END_TIME | TIME | - | HH:MM:SS | NOT NULL |
| DATE | DATE | - | DD/MM/YYYY | NOT NULL |
| APP NAME | STRING | 0-50 | TEXT | NOT NULL |

DATA DICTIONARY
[ SETTINGS & PRIVILEGES ]

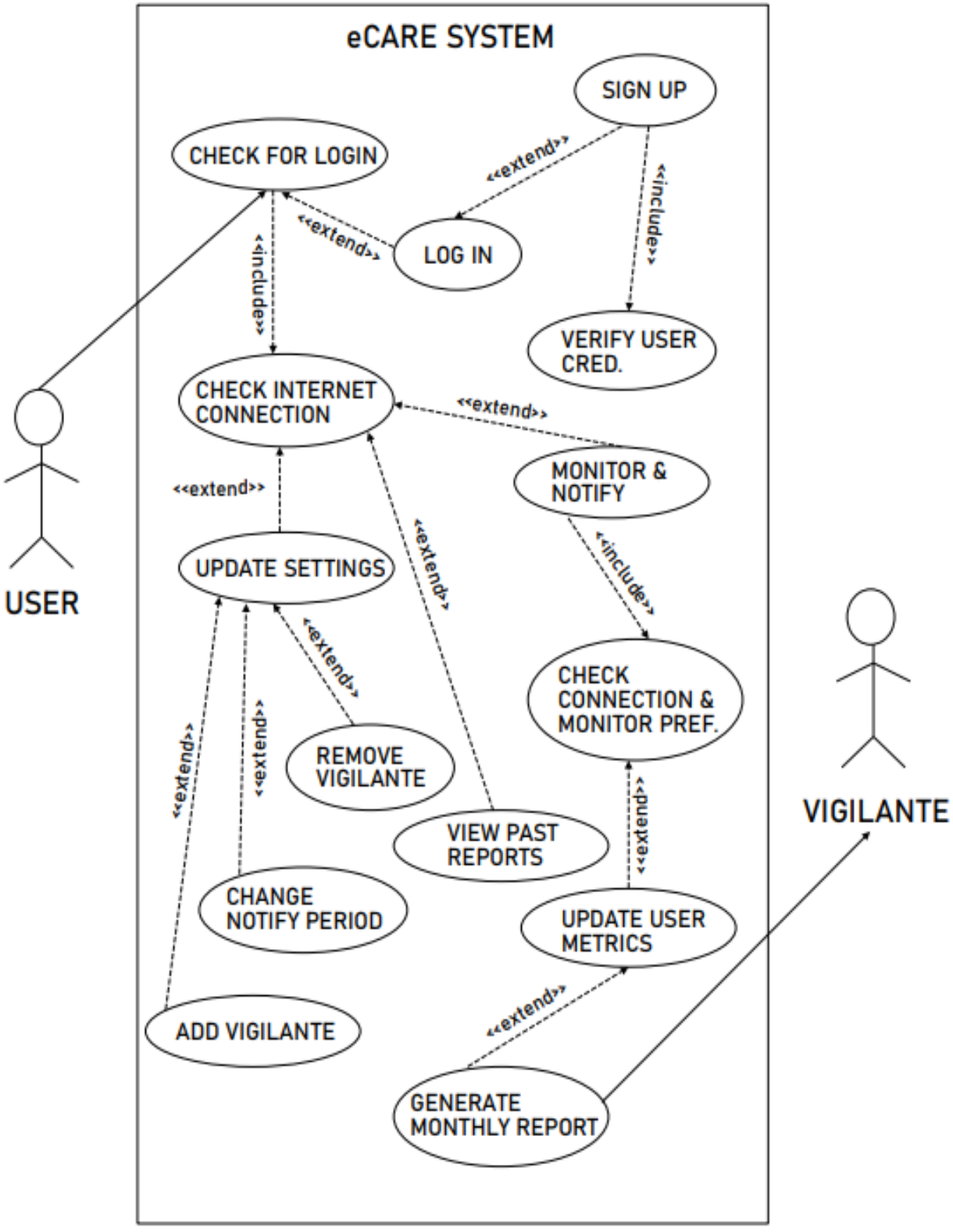
| FIELD | DATA TYPE | LENGTH | VALUES | DESCRIPTION |
|---|---|---|---|---|
| FORCE_OFFL INE | BOOLEAN | - | TRUE,FALSE | NOT NULL |
| REP_TO_VIGI LS | BOOLEAN | - | TRUE,FALSE | NOT NULL |
| MONITOR_AC TIVITY | BOOLEAN | - | TRUE,FALSE | NOT NULL |
| ALERT_DUR ATION | TIME | - | HH:MM:SS | NOT NULL |

DATA DICTIONARY
[ MONTHLY REPORT RECORD ]

| FIELD | DATA TYPE | LENGTH | VALUES | DESCRIPTION |
|---|---|---|---|---|
| ID | INTEGER | 0-100 | AUTO GENERATED | PRIMARY KEY |
| REPORT_FROM | TIMESTAMP | - | TIME FORMAT | NOT NULL |
| REPORT_TO | TIMESTAMP | - | TIME FORMAT | NOT NULL |
| VALIDATION STATUS | BOOLEAN | - | TRUE,FALSE | NOT NULL |



## Use – Case Diagram



## Canvases

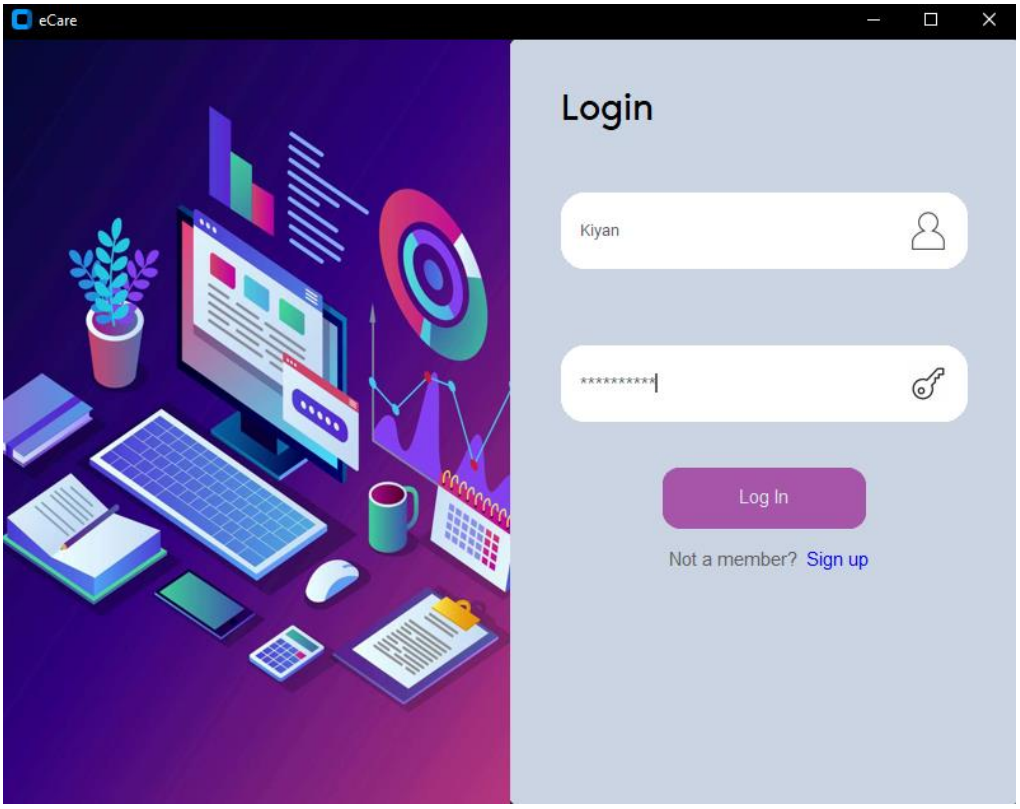
- *AEIOU Framework*

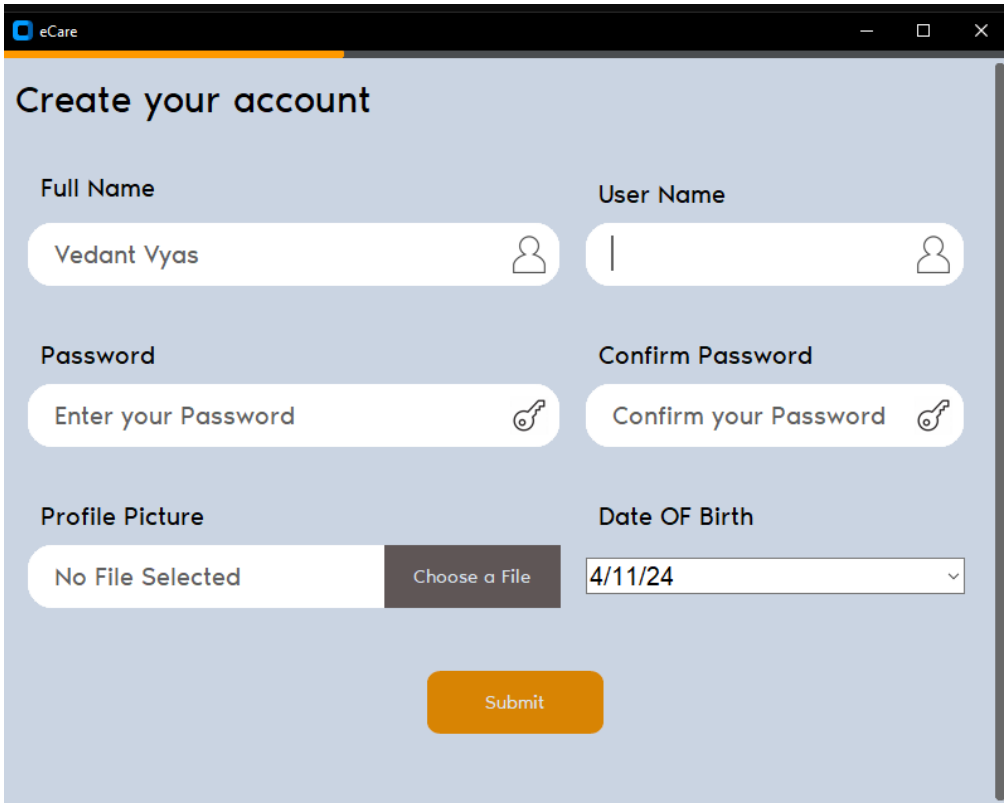
<table>
<tr><th colspan="3">AEIOU Summary</th></tr>
<tr><td>Environment:<br>Laptop<br>PC</td><td>Interactions:<br>User Engagement<br>Data Tracking</td><td>Objects:<br>User<br>Vigilante<br>Currently Runing Apps<br>Alert notifications<br>Past Reports<br>Settings</td></tr>
<tr><td colspan="2">Activities:<br>User Registration & Login<br>App Usage Monitoring<br>Break Reminder<br>Data Analysis<br>Settings Configuration<br>Report Generation</td><td>Users:<br>Individuals<br>Parents<br>Developers<br>Health Professionals<br>Employees<br>Organizations</td></tr>
</table>

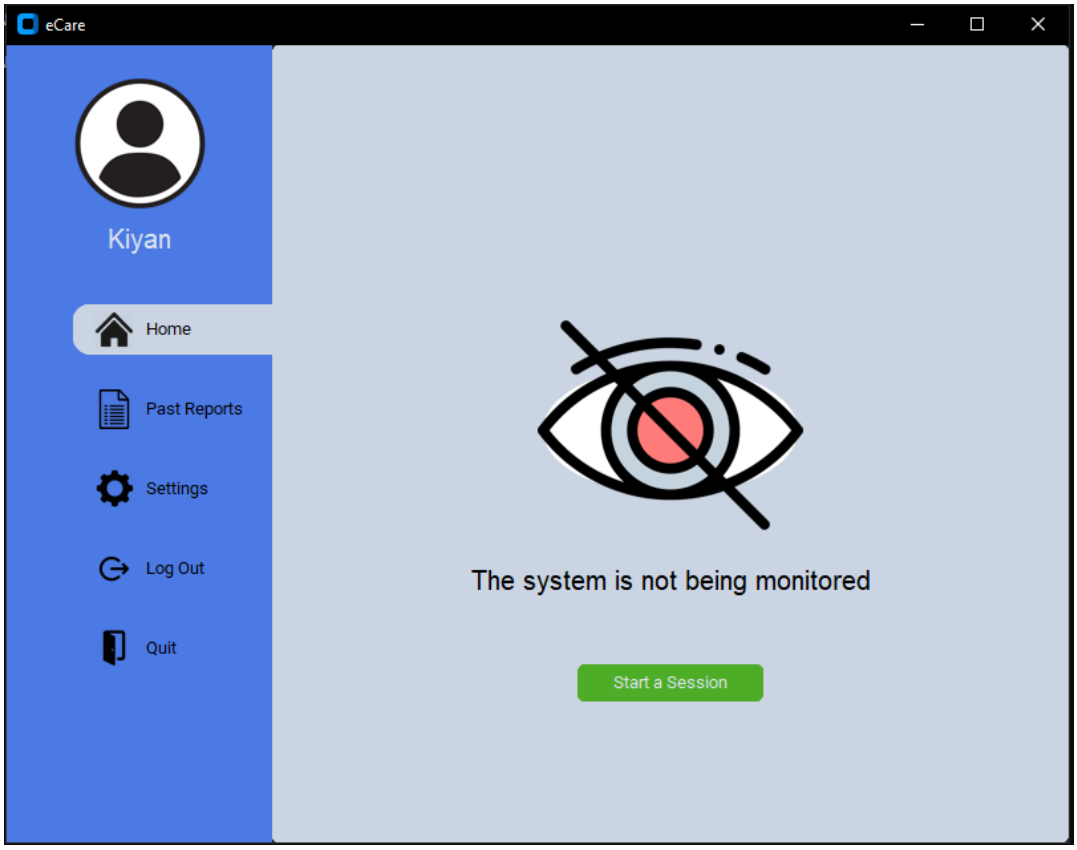
- *Product Development Canvas*

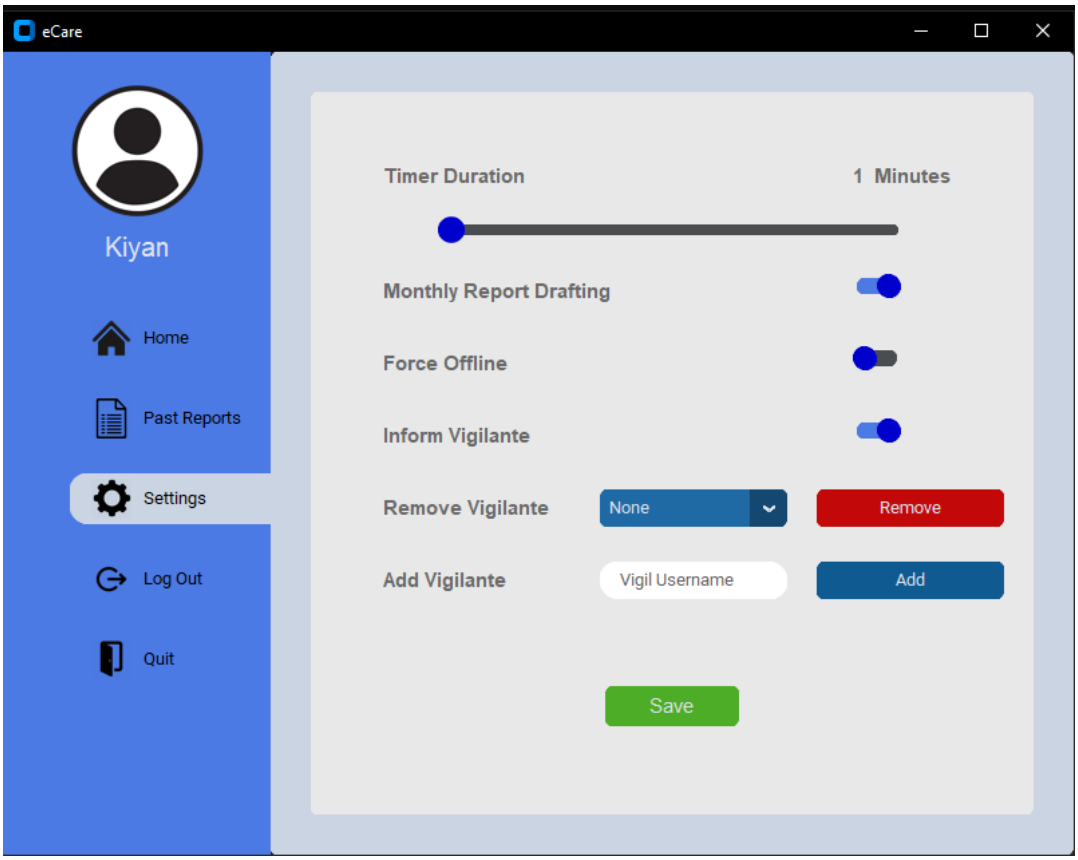
<table>
<tr>
<td rowspan="2">Purpose:<br><br>Eye Protection<br>Manage App Usage<br>Promote Digital Wellbeing<br>Maintain Productivity<br>Parental Control</td>
<td>Product Experience:<br><br>Intuitive reports<br>Helpful remainders<br>Modern Design<br>Easy Customization</td>
<td rowspan="2">Customer Revalidation:<br><br>Appealing Design<br>Light-weight App<br>Positive Productivity Impact<br>Seamless operations</td>
</tr>
<tr>
<td>Product Functions:<br><br>Alert mechanism<br>Real-time monitoring<br>Parental Control<br>Digital Wellbeing</td>
</tr>
<tr>
<td rowspan="2">People:<br><br>Individuals<br>Developers<br>Health professionals<br>Organizations<br>Employees<br>Parents</td>
<td>Product Features:<br><br>Monthly reports<br>Data Analysis<br>Adaptive alert notifications<br>Customizable settings</td>
<td rowspan="2">Reject, Redesign, Retain:<br><br>UI/UX Design</td>
</tr>
<tr>
<td>Component:<br><br>Reporting Module<br>App Monitoring Module<br>Data Analysis Engine<br>Notification System<br>User Settings Module</td>
</tr>
</table>

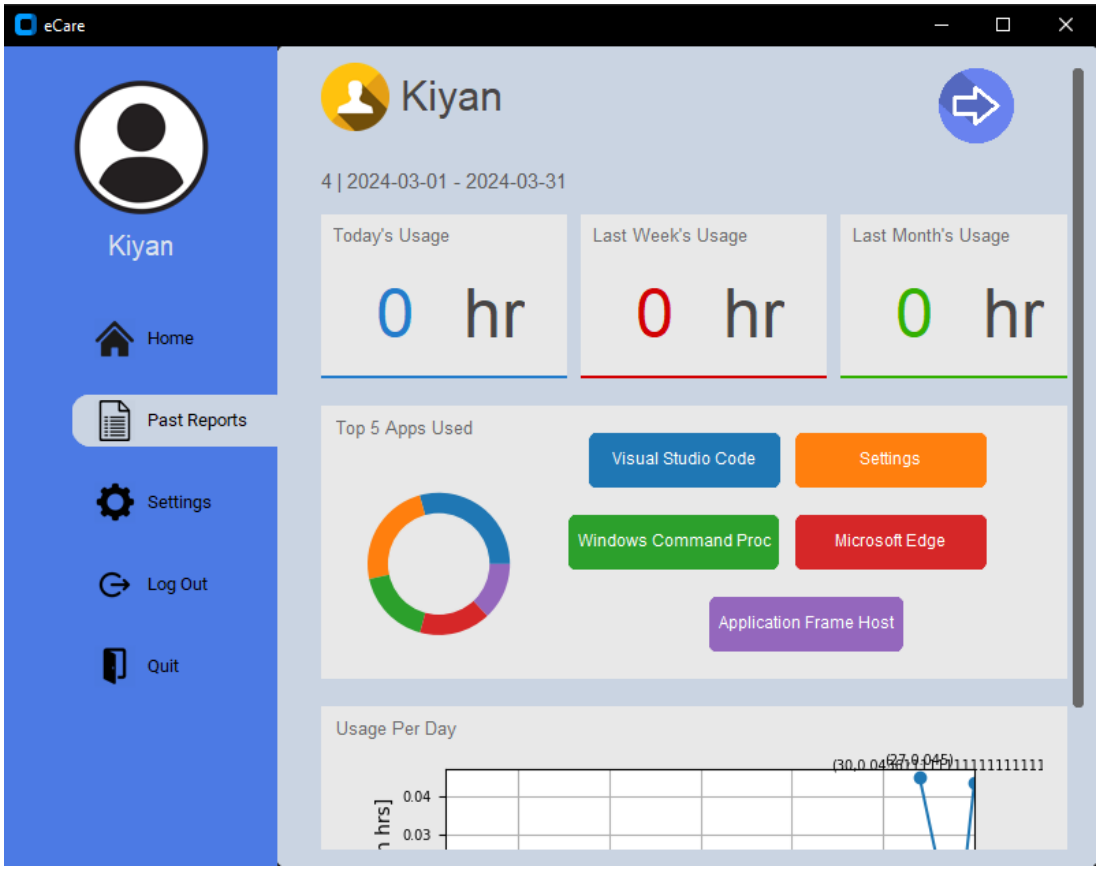
# Implementation

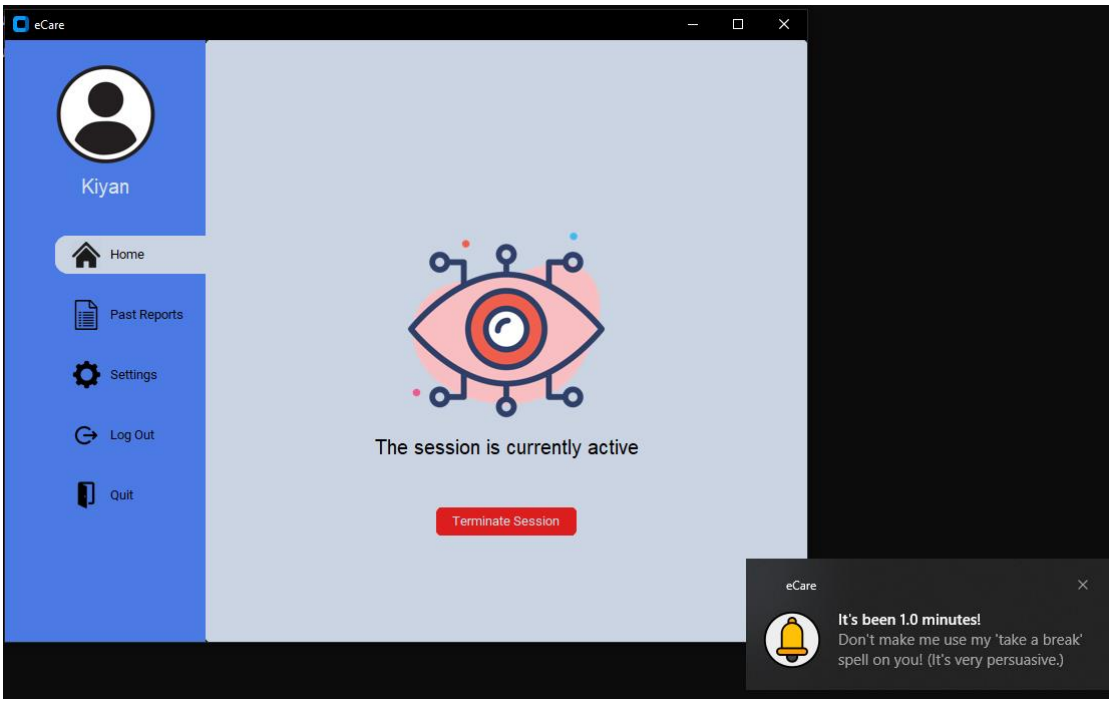



eCare
Kiyan
Home
Past Reports
Settings
Log Out
Quit
The system is not being monitored
Start a Session


eCare
Kiyan
Home
Past Reports
Settings
Log Out
Quit
Timer Duration
1 Minutes
Monthly Report Drafting
Force Offline
Inform Vigilante
Remove Vigilante
None
Remove
Add Vigilante
Vigil Username
Add
Save


eCare
Kiyan
Home
Past Reports
Settings
Log Out
Quit
Kiyan
4 | 2024-03-01 - 2024-03-31
Today's Usage
0 hr
Last Week's Usage
0 hr
Last Month's Usage
0 hr
Top 5 Apps Used
Visual Studio Code
Settings
Windows Command Proc
Microsoft Edge
Application Frame Host
Usage Per Day
0.04
0.03


eCare
Kiyan
Home
Past Reports
Settings
Log Out
Quit
The session is currently active
Terminate Session
eCare
It's been 1.0 minutes!
Don't make me use my 'take a break' spell on you! (It's very persuasive.)

## Concluding Remarks & Future Scope

The eCare System has been developed with the sole purpose of enabling and encouraging individuals, no matter their age, from different walks of life, to take good care of their well-being in today's digital and fast-paced world. With the support of afore mentioned functions such as the alerting sub-system, report generation along with the introduction of a novel vigilance mechanism and a modern & an appeasing approach to UI/UX design specifically targeted towards the Gen-Z's, all the while keeping in mind and respecting the privacy of the system's users, we believe, would motivate the "tech-savvy" individuals to lead to a healthy mental, stress-free life.

With this, we as a team, by no means, state that the system has fully evolved, or is in it's best form. In fact, our team, more than anyone else, believes that there is still much room for improvement and expansion. Some, but certainly not all, areas of improvements includes:-

1. The Vigilance sub-system, still could easily be expanded, in order to enable the system's so called "vigilante"(s) to provide their opinions and reviews, which could then be conveyed to their respective client's.

2. With a special focus on sleek UI/UX design, as mentioned before, a badge rewarding and a streak maintaining sub-system could also be introduced.

3. The report generation sub-system, during its inception, was developed by keeping in mind, the ease in expansion, by careful feedback of our users. Hence, more intuitive and inquisitive analysis, is an obvious, but at the same time, an important area for improvement, in the opinion of the team.

4. And finally, the team, has sufficient faith, that the upcoming generation has boundless potential to come up with creative ideas to develop upon this project further, in more ways than what we, the creators of this system, could imagine.

Lastly, we would like to extend a token of thanks, to all the people, who motivated us and gave interesting inputs and were involved either directly or indirectly, in the creation of this project. We dedicate this project, to you!

## References


- https://care-eyes.com/ - CareUEyes Official Website.
- https://pypi.org/project/customtkinter/0.3/ - CusstomTkinter ( The GUI Library )
- https://www.apachefriends.org/docs/ - Xammp ( Local web-server environment for testing & development )
- https://dev.mysql.com/doc/ - MySQL ( For Database Operations )